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RAMMED EARTH

Reserve

CONSTRUCTION



RESETTLEMENT
ADMINISTRATION

WASHINGTON, D.C.

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RAMMED EARTH CONSTRUCTION

The making of building walls out of earth by tamping it into forms is an ancient method which has been improved and standardized through the use of modern engineering technique in design and construction. The composition of the material recommended, is three parts sand, two parts clay, one part coarse aggregate. This may be varied to suit local conditions but in no case should there be more than 30% clay nor less than 16% coarse aggregate. The amount of water present should be from 10% to 12%. The coarse aggregate may be broken stone, slag or gravel.

Earth so mixed is put into forms in layers of about 4" in depth. It is then compacted into a hard mass by tamping. A good tamper can be made from a 4 x 10 x 15 inch block of hard wood, the 10 inch face beveled on one side so that the tamping edge is approximately 1 1/2" by 10". With a 3/4" iron pipe handle the tool weighs about 18 pounds.

The forms are made of 2" lumber and consist of side walls and end gates. The side walls are 30" high and are braced vertically with 2 x 4 inch struts at 3'-0" on center. Through these struts at 6" from the top and bottom are threaded 1/2" iron bolts. These bolts serve to hold the forms together while tamping is done. The end gates are made the full height of the wall from footing to plate; they are plumbed and braced and remain in place until the wall section is complete. When the form has been tamped full the side boards are taken off, the bolts drifted out and the side walls raised into place for another 30" layer. For all practical purposes

all the forms needed are a straight wall section, a right and left hand corner, and a Tee Section.

Walls should be built on concrete footings and during construction the upper surface should be protected from standing water. Although a 12" wall is adequate for a one story building a 15" wall gives a better working space. The average rate of wall production is 2/3 Cubic Yards per man per day including all workmen whether digging earth, tamping or raising forms. Rammed earth has a bearing strength in excess of 30 tons per square foot. It does not have much strength in bending so all walls should be proportioned to their height (about 1 1/2 times the standards for brick construction).

When the wall has thoroughly dried (at least 30 days) exterior and interior finishes may be applied. The interior can be plastered directly on the wall or color washed without plaster. The exterior may be painted with waterproof color wash, linseed oil with or without color or it can be finished with rough cast lime and cement.

The advantages of this type of construction are: the cost of such a structure properly designed and built will not be greater than the cost of frame construction and will at the same time provide a house that is warmer in Winter and cooler in Summer; that is fireproof; that if set on concrete footings is termite proof; that will last with inexpensive maintenance for several lifetimes.

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